# H04Q

## SELECTING (switches, relays, selectors H01H; electronic switches H03K 17/00)

## Definition statement

*This place covers:*

Methods, circuits, or apparatus for selectively establishing a connection between a desired number of stations (normally two), or between a main station and a desired number of substations (normally one) for the purpose of transferring information via this connection after it has been established; and

Selective calling arrangements over connections already established.

As the scope of H04Q covers a diversity of subject matter, the user is referred to the IPC definitions for the main groups of H04Q.

The following list is intended to assist the user:

- Details of selecting apparatus arrangements, see definition for group H04Q 1/00.
- Selecting arrangements, see definition for group H04Q 3/00.
- For subscriber stations connected by the same line to the exchange, see definition for group H04Q 5/00.
- Arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station, see definition for H04Q 9/00.
- Selecting arrangements for multiplex systems, see definition for group H04Q 11/00.

## References

### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Electric switches; Relays; Selectors | H01H |
| Multiplex communication | H04J |
| Wireless communication networks | H04W |

### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

| | |
|---|---|
| Cables; Conductors | H01B |
| Installation of communication cables or lines | H02G |
| Electronic switches | H03K 17/00 |
| Transmission in general | H04B |
| Broadcast communication | H04H |
| Transmission of digital information | H04L |
| Telephonic communication | H04M |

## Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

| | |
|---|---|
| Satellite | A kind of exchange the operation of which depends upon control signals received from a supervisory exchange. |
| Subscriber | General term for terminal equipment, e.g. telephone for public use. |

| | |
|---|---|
| Substation | Subscriber or monitoring equipment which may connect a single subscriber to a line without choice as to subscriber. |
| Switching centres | Include exchanges and satellites. |

# H04Q 1/00

## Details of selecting apparatus or arrangements {for establishing connections among stations for the purpose of transferring information via these connections}

### Definition statement

*This place covers:*

- Constructional details of selecting apparatuses or arrangements, especially and only used for telecommunications applications. Examples of such arrangements are frames, mounting racks. Examples of such details are doors, panels, pivoting parts;
- Distribution frames, provided or not with patch panels and terminal blocks;
- Methods for detection and sensing of connection of patch cables into patch panels;
- Details of cabling management for the above mentioned arrangements;
- Devices used as interface to network subscribers;
- Electrical details of selecting apparatuses, such as testing circuits for telephone line or subscriber line and arrangements for signalling troubles in unoccupied sub exchanges.

### References

#### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Constructional details common to different types of electric apparatus | H05K 7/186 |

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

| | |
|---|---|
| Special locks for drawers | E05B 65/46 |
| Distribution frames-cassettes | G02B 6/4452 |
| Distribution frames char. by the way of extraction or insertion of the cassette: pivoting, sliding, rotating | G02B 6/4455 |
| Enclosures | G06F 1/181 |
| Method or arrangements for sensing record carriers | G06K 7/00 |
| Record carriers for use with machines and with at least a part designed to carry digital markings | G06K 19/0723 |
| Terminal blocks providing connection to wires or cables | H01R 9/093 |
| Means for guiding or retaining wires or cables connected to terminal blocks | H01R 9/2416 |
| Details of coupling devices | H01R 13/00 |
| Frameworks, boards, panels, desks, casings | H02B 1/00 |

## Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

| | |
|---|---|
| Patch panels | panel, typically rack mounted, that houses cable connections. |
| Distribution frame | passive device which terminates cables, allowing arbitrary interconnections to be made |

## Synonyms and Keywords

*In patent documents, the following abbreviations are often used:*

| | |
|---|---|
| IDC | means two-dimensional |
| MDF | main distribution frame |
| RFID | radio frequency identification |
| DSLAM | digital subscriber line access multiplexer |
| FTT+ | fiber to the + |
| MDU | main distribution unit |
| FDT | fiber drop terminal |

# H04Q 1/28

### Current-supply circuits or arrangements for selection equipment at exchanges

## Definition statement

*This place covers:*

This is a subgroup of H04Q 1/18 for electrical details of selecting apparatus or arrangements. Its scope is clear from the title. It is basically for consultation only as it is little used nowadays.

## Relationships with other classification places

Testing circuits are covered by H04Q 1/20.

Signalling circuits are covered by H04Q 1/30.

## References

### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Current supply arrangements over Ethernet | H04L 12/10 |
| Generation of signalling current at the telephone sub station | H04M 1/505 |
| Current supply arrangements for telephone systems | H04M 19/00 |

### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

| | |
|---|---|
| Power supply means for computers | G06F 1/26 |
| Systems for transmission via power distribution lines | H04B 3/54 |
| Subscriber line interface circuits (SLIC) | H04M 3/005 |

| | |
|---|---|
| Over voltage protection in line interface circuits | H04M 3/18 |
| Subscriber line supervision circuits e.g. off hook detection | H04M 3/2272 |

### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

| | |
|---|---|
| BORSCHT | Battery, Over voltage, Ringing, Signalling, Coding, Hybrid, Testing |
| SLIC | Subscriber Line Interface Circuit |
| CPE | Customer Premise Equipment: any phone equipment (key systems, PBX's, answering machines, etc.) which reside on the customers premises |
| DTMF | Dual Tone Multi Frequency |

## H04Q 1/30

### Signalling arrangements; Manipulation of signalling currents (multiplex systems providing for calling or supervisory signals H04J 1/14, H04Q 3/12; telephone substation equipment H04M 1/00)

### Definition statement

*This place covers:*

This is a subgroup of H04Q 1/18 for electrical details of selecting apparatus or arrangements. It covers arrangements for providing signalling currents to telephone substations from Central Office Exchange.

This group covers the arrangements at the exchanger for providing signalling current to substation. A SLIC should provide the so called BORSCHT (Battery, Over voltage, Ringing, Signalling, Coding, Hybrid, Testing) functions: this group covers the "S" function. SLIC in general covered by H04M 3/005.Over voltage covered by H04M 3/18. Off hook detection covered by H04M 3/2272

Subgroups H04Q 1/32 - H04Q 1/50 define the type of signalling involved. Their scope is clear from the title and nevertheless are nowadays very little used. The only relevant subgroup still active is H04Q 1/4575 that covers DTMF signalling.

### Relationships with other classification places

If the current supply refer to the selecting equipment part of the exchange then this aspect is covered by H04Q 1/28. Testing circuits are covered by H04Q 1/20.

### References

#### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Current supply arrangements over Ethernet | H04L 12/10 |
| Telephone substation equipment | H04M 1/00 |
| Generation of signalling current at the telephone sub station | H04M 1/505 |
| Current supply arrangements for telephone systems | H04M 19/00 |

### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

| | |
|---|---|
| Power supply means for computers | G06F 1/26 |
| Systems for transmission via power distribution lines | H04B 3/54 |
| Subscriber line interface circuits (SLIC) | H04M 3/005 |
| Over voltage protection in line interface circuits | H04M 3/18 |
| Subscriber line supervision circuits e.g. off hook detection | H04M 3/2272 |

## Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

| | |
|---|---|
| BORSCHT | Battery, Over voltage, Ringing, Signalling, Coding, Hybrid, Testing |
| SLIC | Subscriber Line Interface Circuit |
| CPE | Customer Premise Equipment: any phone equipment (key systems, PBX's, answering machines, etc.) which reside on the customers premises |
| DTMF | Dual Tone Multi Frequency |

# H04Q 1/54

## Amplifier switched-on automatically in dependence on automatically-selected lines

## Definition statement

*This place covers:*

This is a subgroup of H04Q 1/18 for electrical details of selecting apparatus or arrangements. Its scope is clear from the title. It is basically for consultation only as it is little used nowadays.

## Relationships with other classification places

Testing circuits are covered by H04Q 1/20.

Signalling circuits are covered by H04Q 1/30.

## References

### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Current supply arrangements over Ethernet | H04L 12/10 |
| Generation of signalling current at the telephone sub station | H04M 1/505 |
| Current supply arrangements for telephone systems | H04M 19/00 |

### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

| | |
|---|---|
| Power supply means for computers | G06F 1/26 |
| Systems for transmission via power distribution lines | H04B 3/54 |

| | |
|---|---|
| Subscriber line interface circuits (SLIC) | H04M 3/005 |
| Over voltage protection in line interface circuits | H04M 3/18 |
| Subscriber line supervision circuits e.g. off hook detection | H04M 3/2272 |

### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

| | |
|---|---|
| BORSCHT | Battery, Over voltage, Ringing, Signalling, Coding, Hybrid, Testing |
| SLIC | Subscriber Line Interface Circuit |
| CPE | Customer Premise Equipment:any phone equipment (key systems, PBX's, answering machines, etc.) which reside on the customers premises |
| DTMF | Dual Tone Multi Frequency |

## H04Q 1/56

### Balancing circuitry switched-on automatically in dependence on automatically-selected lines

### Definition statement

*This place covers:*

This is a subgroup of H04Q 1/18 for electrical details of selecting apparatus or arrangements. Its scope is clear from the title. It is basically for consultation only as it is little used nowadays.

### Relationships with other classification places

Testing circuits are covered by H04Q 1/20.

Signalling circuits are covered by H04Q 1/30.

### References

#### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Current supply arrangements over Ethernet | H04L 12/10 |
| Generation of signalling current at the telephone sub station | H04M 1/505 |
| Current supply arrangements for telephone systems | H04M 19/00 |

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

| | |
|---|---|
| Power supply means for computers | G06F 1/26 |
| Systems for transmission via power distribution lines | H04B 3/54 |
| Subscriber line interface circuits (SLIC) | H04M 3/005 |
| Over voltage protection in line interface circuits | H04M 3/18 |
| Subscriber line supervision circuits e.g. off hook detection | H04M 3/2272 |

## Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

| | |
|---|---|
| BORSCHT | Battery, Over voltage, Ringing, Signalling, Coding, Hybrid, Testing |
| SLIC | Subscriber Line Interface Circuit |
| CPE | Customer Premise Equipment:any phone equipment (key systems, PBX's, answering machines, etc.) which reside on the customers premises |
| DTMF | Dual Tone Multi Frequency |

# H04Q 3/00

### Selecting arrangements (H04Q 5/00 - H04Q 11/00 take precedence)

## Definition statement

*This place covers:*

Selecting arrangements to which subscribers are connected via wired circuit-based links.

## Relationships with other classification places

Switches, relays, selectors are classified in H01H. Electronic switches are classified in H03K 17/00.

## References

### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Selecting arrangements wherein two or more subscriber stations are connected by the same line to the exchange | H04Q 5/00 |
| Arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station, in which substation desired apparatus is selected for applying a control signal thereto or for obtaining measured values therefrom | H04Q 9/00 |
| Selecting arrangements for multiplex systems | H04Q 11/00 |
| Multiplex communication | H04J |
| Wireless communications networks | H04W |

## Special rules of classification

In groups H04Q 3/0016 - H04Q 3/0095 classification using H04Q 3/00 CPC symbols only. In all other groups CPC symbols of H04Q 2213/13-**H04Q2213/13999**. ) are used for additional information.

Groups H04Q 3/02 - H04Q 3/495 corresponds to old technology into which no further documents are to be classified.

## Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

| | |
|---|---|
| Narrowband | Transmission of up to 2 Mbps |
| Broadband | Transmission above 2 Mbps |

## H04Q 3/526

### {Optical switching systems}

### Definition statement

*This place covers:*

This group is no longer in use to classify new documents.

### References

#### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Optical cross connects, their architectures, operation, maintenance and control, as well as their optical buffering and optical signal processing means. | H04Q 11/0005 |
| Optical coupling means having switching means. | G02B 6/28 |
| Physical details of controlling the light using movable of deformable optical means. | G02B 26/00 |
| Physical details of light controlling devices. | G02F 1/00 |

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

| | |
|---|---|
| Optical cross connects, their architectures, operation, maintenance and control, as well as their optical buffering and optical signal processing means. | H04Q 11/0005 |

## H04Q 3/528

### {Details}

### Definition statement

*This place covers:*

This group is no longer in use to classify new documents.

## H04Q 5/00

### Selecting arrangements wherein two or more subscriber stations are connected by the same line to the exchange

### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

| | |
|---|---|
| DC | direct current |
| AC | alternating current |

# H04Q 9/00

## Arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station, in which substation desired apparatus is selected for applying a control signal thereto or for obtaining measured values therefrom

## Definition statement

*This place covers:*

Monitoring/supervising of remote device/systems.

Collecting data from sensors

Apparatus comprising RFID in combination with sensors.

## References

### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Tariff metering apparatus -Remote reading of utility meter | G01D 4/002 |
| Mechanical means for transferring the output of a sensing member (sensor itself) | G01D 5/00 |
| Indicating or recording devices | G01F 15/06 |
| Indicating or measuring liquid level - Particular electronic circuits for digital processing equipment | G01F 23/0069 |
| Electric program-control systems (Factory/installation-sensors connected to control centers via databus) | G05B 19/02 |
| Record carriers for use with machines - Constructional details - for no contact communication (RFID) | G06K 19/07749 |
| Transmission systems for measured values, control or similar signal (Remote control) | G08C |

### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

| | |
|---|---|
| Detecting, measuring or recording for diagnostic purposes | A61B 5/00 |
| Devices for measuring, signalling, controlling, or distributing tyre pressure or temperature - transmitting signals from a wheel unit to a vehicle mounted receiver | B60C 23/0408 |
| Electric circuits specially adapted for vehicles, not otherwise provided for | B60R 16/02 |
| Applications of remote control devices for cranes | B66C 13/40 |
| Electric permutation locks | E05B 49/00 |
| Electric programme-control systems | G05B 19/02 |
| Input and output arrangements for digital data processing | G06F 3/00 |
| Registering or indicating the working of vehicles - communicating information to a remotely located station | G07C 5/008 |
| Individual entry or exit registers | G07C 9/00 |

| | |
|---|---|
| Home automation networks | H04L 12/2803 |
| Transmission control procedure - sensor networks | H04L 29/08558 |
| Telephonic communication systems adapted for combination with other electrical systems | H04M 11/00 |
| Power saving arrangements | H04W 52/02 |
| Network topologies - Sensor networks | H04W 84/18 |

### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

| | |
|---|---|
| RFID | Radio Frequency IDentification |

## H04Q 11/00

### Selecting arrangements for multiplex systems (multiplex systems H04J)

### Relationships with other classification places

Switches, relays, selectors are classified in H01H. Electronic switches are classified in H03K 17/00.

### References

#### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Multiplex communication | H04J |
| Wireless communications networks | H04W |

### Special rules of classification

In groups H04Q 11/0428 - H04Q 11/0471 further classification of invention information is made using CPC symbols of **H04Q213/000**-**H04Q999/00**.

In all groups CPC symbols of H04Q 2213/13-**H04Q2213/13999**. are used for additional information.

Broadband documents are classified in H04Q 11/0478.

### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

| | |
|---|---|
| Narrowband | Transmission of up to 2 Mbps |
| Broadband | Transmission above 2 Mbps |

### Synonyms and Keywords

*In patent documents, the following abbreviations are often used:*

| | |
|---|---|
| ISDN | Integrated Services Digital Network |

# H04Q 11/0001

## {using optical switching}

## Definition statement

*This place covers:*

- Optical cross connects, their architectures, operation, maintenance and control, as well as their optical buffering and optical signal processing means;
- Optical signal distribution, networking, network architectures, operation, maintenance and control, wherein the optical nature of the signal is relevant to the network layers extending above the physical and data link layers;
- Networking equipment of optical distribution networks such as passive optical networks, insofar as it is relevant to the planning, design, operation, administration and maintenance of the optical distribution network (e.g. optical network units details).

## Relationships with other classification places

- H04J 14/02 covers wavelength division optical multiplex systems, neither group takes precedence above the other for classification;
- H04L 12/56 covers packet switching systems in general. In packet switching networks where the optical property of the signal is relevant, groups from the H04L 12/56 can be used to complement the classification where relevant;
- H04L 12/24 covers the management of networks in general. When the subject-matter deals with the management of optical network, where it is relevant that the network is, groups from the H04L 12/24 can be used to complement the classification where relevant;
- H04J 3/00 covers time division multiplex systems in general, including SONET/SDH.

## References

### *Limiting references*

*This place does not cover:*

| | |
|---|---|
| Optical coupling means having switching means | G02B 6/28 |
| Physical details of controlling the light using movable of deformable optical means | G02B 26/00 |
| Physical details of light controlling devices | G02F 1/00 |
| The transmission and reception of optical signals per se | H04B 10/00 |
| SONET/SDH networks | H04J 3/00 |
| WDM networks | H04J 14/02 |
| Non reconfigurable add-and-drop multiplexing | H04J 14/04 |
| Fibre channel networks and switches | H04L 49/357 |

## Special rules of classification

All Indexing Codes within the group are used as an indexing system, therefore all codes should be given when relevant.

## H04Q 11/0003

### {Details}

### Definition statement

*This place covers:*

Details not classified in the groups H04Q 11/0005 and H04Q 11/0062, for example:

- The construction, usage and control of optical packet buffers for optical routing and switching;
- Arrangements to compress optical packets in the time domain;
- Optical packet header processing arrangements for optical routing and switching.

## H04Q 11/0005

### {Switch and router aspects}

### Definition statement

*This place covers:*

Optical cross connects, their architectures, operation, maintenance and control.

## H04Q 11/0062

### {Network aspects}

### Definition statement

*This place covers:*

- Optical signal distribution, networking, network architectures, operation, maintenance and control, wherein the optical nature of the signal is relevant to the network layers extending above the physical and data link layers;
- Networking equipment of optical distribution networks such as passive optical networks, insofar as it is relevant to the planning, design, operation, administration and maintenance of the optical distribution network (e.g. optical network units details).

## H04Q 11/0066

### {Provisions for optical burst or packet networks}

### Definition statement

*This place covers:*

- Optical burst switching networking, network architectures, operation, maintenance and control;
- Optical networking, network architectures, operation, maintenance and control, insofar as special arrangements or techniques for processing the optical packets in the optical signal are used.

## H04Q 11/0071

### {Provisions for the electrical-optical layer interface}

### Definition statement

*This place covers:*

Interaction between the electrical and optical part of the network insofar as special arrangements or techniques are used that take advantage of the optical nature of the signals within the optical network.